

## Optimisation of formulation in development of candied musk lime peel using response surface methodology (RSM)

### ABSTRACT

The development of candied musk lime peel was carried out using Response Surface Methodology (RSM) and ECHIP software. In this study, a new product of candied musk lime peel (CMLP) with the optimum formulation of ingredient was developed. The CMLP development involved pickling, candying and drying processes. Discarded musk lime peel, a by-product from enzymatic peeling of candied musk lime fruit was used in this study. The three main ingredients responsible in the development process were sugar syrup, sorbitol and citric acid. Several formulations were obtained through RSM analysis using the three main ingredients. The peels were treated with each formulation separately and the developed products were then evaluated by a group of trained sensory panellists. Sensory results using RSM analysis and ECHIP software produced the target value and the optimum value for the ingredients. The optimum value for each ingredient was 56.3 °Brix sugar syrup, 7.0% (w/v) citric acid and 10% (v/v) sorbitol. The optimum value was the suggested optimum formulation from RSM analysis for the development of CMLP, however, verification process had to be done to confirm the optimum formulation. The sensory profiles for the product acceptance were done by a group of trained panellists and the values obtained were interpreted as target value and experimental value. Comparing of target value with experimental value was called a verification of product. In this study, the verification process has proved that the developed product using optimum formulation has been achieved. Therefore, the product development of candied musk lime peel using RSM optimisation was satisfactory.

**Keyword:** Optimisation; Ingredient formulation; Candied musk lime peel; Response surface methodology